



Identification of an osteoclastogenic CD4+ T cell population producing IL-17 and TNF α

Thomas Ciucci, Eléonore Birgy-Barelli, Jérôme Pene, Grazia Abou-Ezzi, Nadia Arab, Xavier Hébuterne, Hans Yssel, Claudine Blin-Wakkach, Abdelilah Wakkach

► To cite this version:

Thomas Ciucci, Eléonore Birgy-Barelli, Jérôme Pene, Grazia Abou-Ezzi, Nadia Arab, et al.. Identification of an osteoclastogenic CD4+ T cell population producing IL-17 and TNF α . 6th european workshop on immune-mediated inflammatory diseases, Nice, France. pp.P24. inserm-00643973

HAL Id: inserm-00643973

<https://www.hal.inserm.fr/inserm-00643973>

Submitted on 23 Nov 2011

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



POSTER PRESENTATION

Open Access

Identification of an osteoclastogenic CD4⁺ T cell population producing IL-17 and TNF α

Thomas Ciucci¹, Eléonore Birgy-Barelli¹, Jérôme Pene², Grazia Abou-Ezzi¹, Nadia Arab³, Xavier Hébuterne³, Hans Yssel², Claudine Blin-Wakkach¹, Abdelilah Wakkach^{1*}

From 6th European Workshop on Immune-Mediated Inflammatory Diseases
Nice, France. 23-25 November 2011

Background

Crohn's disease is an inflammatory bowel disease (IBD) characterized by an augmentation of activated T cells and a severe osteopenia due to an increased activity of osteoclasts, the bone-resorbing cells. Osteoclasts result from differentiation of monocytes under the control of two cytokines, RANK-L and M-CSF, produced by bone-forming osteoblasts. Inflammatory cytokines produced by T cells have been shown to increase osteoclastogenesis, leading to osteopenia. The aim of this study is to identify CD4⁺ T cells implicated in osteolysis.

Material and methods

We used a murine model of IBD associated with severe osteopenia, the IL-10^{-/-} mouse to analyze the phenotype and function of bone marrow (BM) CD4⁺ T cells.

Results

We showed that CD4⁺ T cells isolated from the BM of IL-10^{-/-} mice with IBD induced in vitro the differentiation of osteoclasts. The analysis in BM of the Th subsets present among these CD4⁺ T cells revealed, in addition to Th1, a population producing both TNF- α and IL-17, cytokines known to increase osteoclastogenesis. Our results showed that sorted CD4⁺ IL-17⁺ TNF α ⁺ T cells increased the production of RANK-L by osteoblasts and induce the differentiation of osteoclasts in vitro. Furthermore, this population led to the recruitment of monocytes (pre-osteoclasts) in the BM in vivo participating thereby to the increased osteoclastogenesis. Altogether, the induction of RANK-L and monocyte recruitment by CD4⁺ IL-17⁺ TNF α ⁺ T cells may represent a possible mechanism of osteolysis in vivo. Lastly, we found the CD4⁺ IL-17⁺

TNF α ⁺ population in the blood of patients with Crohn's disease, but not in controls and experiments are in progress to confirm the osteoclastogenic role of this population in human.

Conclusion

Altogether, our results showed for the first time that CD4⁺ IL-17⁺ TNF α ⁺ cells represent an osteoclastogenic T cell subset present in vivo, and potentially responsible for osteopenia in mice and Crohn's patients.

Author details

¹INSERM U576, Nice, France. ²INSERM U844, Montpellier, France. ³Dept. of Gastroenterology, Hospital l'Archet, Nice, France.

Published: 23 November 2011

doi:10.1186/1479-5876-9-S2-P24

Cite this article as: Ciucci et al.: Identification of an osteoclastogenic CD4⁺ T cell population producing IL-17 and TNF α . *Journal of Translational Medicine* 2011 **9**(Suppl 2):P24.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit



¹INSERM U576, Nice, France

Full list of author information is available at the end of the article